

Appl. No. 10/020,541
Reply to Office action of January 13, 2005

Remarks

Introduction

Claims 16-22 and 30 were pending. By way of this response, the specification has been amended to address the objections in the Office Action; claims 16, 18-22, and 30 have been amended; and claim 17 has been cancelled. Support for the amendments to the specification and the claims can be found in the application as originally filed, and no new matter has been added. Accordingly, claims 16, 18-22, and 30 are currently pending.

In view of the amendments to the specification and claims, applicant respectfully requests reconsideration and withdrawal of the objections and rejections.

Specification Objections

The specification has been objected for containing embedded hyperlinks and lacking sequence identification numbers.

Applicant has amended the specification as set forth above. In particular, the specification has been amended by deleting the embedded hyperlinks, and by providing the sequence identification numbers for the amino acid sequences disclosed in the specification.

In view of the above, applicant submits that the specification is in proper form and that the objections have been overcome.

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Claim Objections

Claim 17 has been objected to for encompassing non-elected subject matter. Claim 30 has been objected to for grammatical errors.

Applicant has amended claim 16 to be directed to the elected subject matter, and has cancelled claim 17. Claim 30 has been amended to be grammatically correct.

In view of the above, applicant submits that the claims are directed to the elected subject matter and are grammatically correct, and that the claim objections have been overcome.

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 16, 18, and 30 have been rejected under 35 U.S.C. § 112, second paragraph as allegedly being indefinite. In particular, the Office Action states that there was insufficient antecedent basis for "said PDT treatment" in claim 18, and for "said composition" in claim 30.

Applicant has amended claim 16 to provide proper antecedence for the phrases "said PDT treatment" and "said composition".

In view of the above, applicant submits that the present claims satisfy the requirements of 35 U.S.C. § 112, second paragraph, and respectfully requests that the rejection of the present claims based on this statutory provision be withdrawn.

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Rejections Under 35 U.S.C. § 112, first paragraph

Claims 16, 18-22, and 30 have been rejected under 35 U.S.C. § 112, first paragraph as allegedly failing to comply with the written description requirement, and for not being enabled by the specification.

Applicant does not concede to the correctness of the rejections. However, to advance the prosecution of the above-identified application, the claims have been amended to recite delivery of brimondine. As acknowledged in the Office Action, the use of brimonidine to protect ocular neural tissue from damage caused by photodynamic therapy (PDT) is described and enabled (Office Action page 6, penultimate paragraph, and page 7, second full paragraph).

In view of the above, applicant submits that the present claims satisfy the requirements of 35 U.S.C. § 112, first paragraph, and respectfully requests that the rejection of the present claims based on this statutory provision be withdrawn.

Rejection Under 35 U.S.C. § 102

Claims 16, 18-22, and 30 have been rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by Miller et al. (US 2002/0040015; hereinafter Miller).

Applicant has amended claim 16 to recite that the present methods comprise delivering a composition that comprises brimonidine to ocular neural tissue of a patient.

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As acknowledged in the Office Action, Miller does not disclose the use of brimonidine (Office Action, page 11, first full paragraph).

In view of the above, applicant submits that the present claims, that is claims 16, 18-22 and 30, are not anticipated by Miller under 35 U.S.C. § 102.

Rejections Under 35 U.S.C. § 103

Claims 16 and 17 have been rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Miller in view of Wheeler et al. (1999).

The Office Action states that it would have been obvious to a person of ordinary skill in the art to perform the method taught by Miller and substitute brimonidine as the neuroprotective agent with a reasonable expectation of success because Wheeler teaches that brimonidine is a neuroprotective agent. The Office Action also states that a person of ordinary skill in the art would have been motivated to substitute brimonidine as the neuroprotective agent in Miller's method because Wheeler teaches that brimonidine is an anti-apoptotic neuroprotective agent that can be used to protect target cells from neuronal injury.

Applicant traverses the rejection as it relates to the present claims.

The present claims recite delivering a composition to a patient's ocular neural tissue. The composition comprises an

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amount of brimonidine effective to protect a plurality of ocular neurons from cell death caused by a photoactive component of the photodynamic therapy (PDT) treatment.

Applicant submits that a person of ordinary skill in the art would not be motivated to combine the teachings of Miller and Wheeler, let alone to do so and obtain the presently claimed methods. In addition, applicant submits that even if the teachings of Miller and Wheeler could be erroneously combined, the combination fails to disclose, teach, or even suggest all of the elements as recited in the present claims.

Miller discloses administration of anti-angiogenic agents and apoptosis-modulating factors in conjunction with photodynamic therapy. Miller discloses that the apoptosis-modulating factor can be any molecule that enhances or stimulates apoptosis in cells or tissues of the choroidal neovasculture (CNV), or any molecule that represses apoptosis in cells or tissues surrounding the CNV. Miller discloses that the methods preferably comprise administering a peptide capable of inducing apoptosis in cells (paragraph [0018]). Miller discloses a long list of protein apoptosis-repressing factors. Specifically, Miller discloses that suitable apoptosis-repressing factors include the proteins or peptides, survivin, CD30, BDNF, FGF2, caspase inhibitors, and PEDF. Miller also includes a brief statement that other apoptosis-repressing factors can include anti-sense nucleic acid or peptidyl nucleic acid sequences that reduce expression of death agonists (paragraph [0066]). Example 6 of Miller discloses the use of an apoptosis activator in conjunction with PDT.

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Wheeler discloses the use of brimonidine to protect ocular neurons from ischemia and optic nerve compression (see methods).

Applicant submits that the a person of ordinary skill in the art would not be motivated to combine the teachings of Miller and Wheeler, let alone to do so and obtain the presently claimed invention. Miller includes a general disclosure of apoptosis modulating factors, and actually indicates a preference for using apoptosis-inducing factors (paragraphs [0018] and Example 6). Thus, when interpreted as a whole, applicant submits that a person of ordinary skill in the art when presented with the teachings of Miller, would be motivated to use apoptosis-inducing factors, and not neuroprotectants.

Applicant acknowledges that Miller includes a brief description that apoptosis-repressing factors may be used in conjunction with PDT. However, applicant submits that Miller specifically emphasizes the importance of protein or peptide-based apoptosis-repressing factors (paragraph [0066]). Thus, to the extent that a person of ordinary skill in the art could consider using apoptosis-repressing factors in conjunction with PDT, applicant submits that a person of ordinary skill in the art would actually be motivated to use proteins or peptides as apoptosis-repressing factors based on the teachings of Miller as a whole. Applicant submits that a person of ordinary skill in the art when interpreting the entire disclosure of Miller would not be motivated to use or even try to use, small molecule chemical compounds, such as brimonidine, as disclosed by Wheeler, in the methods recited in the present claims.

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Furthermore, applicant submits that a person of ordinary skill in the art given the teachings of Miller would not be motivated to use the teachings of Wheeler to obtain the presently claimed methods. As discussed above, Wheeler discloses neuroprotectant effects of brimonidine in two experimental models which are different and distinct from PDT. In particular, Wheeler specifically discloses the use of brimonidine in mechanical injury (optic nerve crush) and in ischemic injury. As understood by persons of ordinary skill in the art, photodynamic therapy (PDT) is neither a mechanical injury or ischemic injury. In contrast to such mechanical and ischemic injuries, photodynamic therapy is based on the selective formation of reactive oxygen species which cause photochemical damage (paragraph [0006] of Miller). Thus, applicant submits that a person of ordinary skill in the art seeking to use apoptosis-repressing factors in conjunction with PDT would not be motivated to seek such factors based on a reference, such as Wheeler, that discloses the use of neuroprotectants in cases of different and distinct forms of insult, such as the mechanical and ischemic injuries disclosed by Wheeler.

Moreover, applicant submits that the combination of Miller and Wheeler does not disclose, teach, or suggest the present invention. For example, the combination of Miller and Wheeler does not disclose, teach, or even suggest delivering a composition to a patient's ocular neural tissue, the composition comprising an amount of brimonidine effective to protect a plurality of ocular neurons from cell death caused by a photoactive component of the PDT treatment, as recited in the present claims.

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As discussed above, Miller includes only a brief general disclosure of certain protein or peptide based apoptosis-repressing factors, and does not disclose, or even suggest the use of a small chemical compound, such as brimonidine. Wheeler fails to provide the deficiencies apparent in Miller. For example, Wheeler fails to disclose or even suggest delivering an amount of brimonidine effective to protect ocular neurons from cell death caused by a photoactive component of the PDT treatment. Miller does not disclose, teach, or even suggest the use of brimonidine, and Wheeler does not disclose, teach, or even suggest the amounts of brimonidine recited in the present claims, such as an amount that provides neuroprotection to neurons caused by a photoactive component of the PDT treatment. Thus, applicant submits that the combination of Miller and Wheeler does not disclose, teach, or even suggest all of the elements recited in the present claims.

In addition, each of the present dependent claims is separately patentable over the prior art. For example, none of the prior art disclose, teach, or even suggest the present methods including the additional feature or features recited in any of the present dependent claims. Therefore, applicant submits that each of the present claims is separately patentable over the prior art.

Obviousness-type Double Patenting

Claim 16-22 and 30 have been rejected under the judicially created doctrine of obviousness-type double patenting as being

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unpatentable over claims 1-12 of U.S. Patent No. 5,856,329 (the '329 patent) in view of Miller.

Applicant traverses the rejections as it relates to the present claims. Applicant submits that the present claims are unobvious from the claims of the '329 patent, and therefore, the rejection has been overcome. For example, applicant submits that the claims of the '329 patent do not disclose, teach, or even suggest a method of protecting ocular neural tissue from damage caused by PDT treatment. Claim 1 of the '329 patent is broadly directed to protecting nerve cells in a mammal suffering a noxious action or at risk of experiencing a noxious action. Dependent claims 2-4 identify specific noxious actions. Claim 3 states that the noxious action is non-glaucoma tous ischemia.

Applicant submits that the presently claimed methods are different and distinct from the claimed methods of the '329 patent. For example, the presently claimed methods are directed to protecting neurons from cell death caused by a photoactive component of the PDT treatment. As discussed herein, PDT treatment results in photochemical damage, which is different and distinct from mechanical or ischemic damage.

In view of the above, applicant submits that the present claims are unobvious from and patentable over Miller in combination with the '329 patent.

Conclusion

In conclusion, applicant has shown that the present specification is in proper form, that the present claims are not

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subject to obviousness-type double patenting, satisfy the requirements of 35 U.S.C. § 112, and are not anticipated by and are unobvious from and patentable over the prior art under 35 U.S.C. §§ 102 and 103. Therefore, applicant submits that the present claims, that is claims 16, 18-22, and 30 are allowable. Therefore, applicant respectfully requests the Examiner to pass the above-identified application to issuance at an early date. Should any matters remain unresolved, the Examiner is requested to call (collect) applicant's attorney at the telephone number given below.

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Respectfully submitted,


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